



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,846	11/04/2003	Motoki Kakui	50395-236	4038
7590 03/29/2006			EXAMINER	
McDERMOTT, WILL & EMERY 600 13th Street, N.W. Washington, DC 20005-3096			HUGHES, DEANDRA M	
			ART UNIT	PAPER NUMBER
			3663	

DATE MAILED: 03/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/699,846	Applicant(s) KAKUI, MOTOKI	
	Examiner Deandra M. Hughes	Art Unit 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| <p>✓ 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>✓ 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/4/06</u>.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: _____.</p> |
|---|--|

DETAILED ACTION

Response to Amendment

1. The amendment filed 01/17/06 has been entered.

Information Disclosure Statement

2. The information disclosure statement (IDS) filed on 01/04/06 has been considered by the examiner.

Claim Rejections - 35 USC § 112

3. Applicant's amendment has overcome the U.S.C. 112-1st and U.S.C. 112-2nd paragraph rejections. Consequently, the said rejections are withdrawn.

Response to Arguments

4. Applicant's arguments filed 01/17/04 have been fully considered but they are not persuasive.

Applicant argues the following:

- A) Bolshtyansky fails to disclose that the optical fiber is a nonlinear medium.
(pg. 8, lines 16-17);
- B) Bolshtyansky discloses from "fig. 4 that the output light from fiber 52 is illustrated as a multi wavelength pump that has four separate wavelengths (light λ_1 , λ_2 , λ_3 , λ_4)." (pg. 8, last 2 lines);
- C) "...Bolshtyansky et al. neither disclose nor suggest the notion of spreading a wavelength band of the light from a light source system and using the light as a pump for a Raman amplifier." (pg. 9, lines 16-18);

D) With regard to claims 5 and 9, there is no suggestion to combine
Bolshtyansky and Agrawal (pg. 10, lines s4-6).

5. Argument (A) is not persuasive because optical fibers are inherently nonlinear mediums. As was noted in the previous office action (dated 10/20/05; pg. 3, paragraph 7), Applicant clearly admits that optical fibers are nonlinear mediums in his paragraph [0040] of his specification. This is abundantly well known in the art. For applicant's edification, the Examiner has provided an additional reference (Agrawal, pg. 59; please note the lines 1-2 under Nonlinear Optical Effects) attesting to this inherency.

6. Argument (B) is not persuasive because the arguments do not comply with 37 CFR 1.111(c) because it does not clearly point out the patentable novelty which he thinks the claims present in view of the state of the art disclosed by the reference cited. Further, it does not show how the amendments avoid the reference.

7. Argument (C) is not persuasive because "spreading a wavelength band of the light from a light source system and using the light as a pump for a Raman amplifier" is not claimed.

8. In response to applicant's argument (D) that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Agrawal (Fiber-

Art Unit: 3663

Optic Communication Systems) is a textbook on general knowledge available to one of ordinary skill in the art.

Claim Rejections - 35 USC § 102

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 1-4, 6-8, and 10-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Bolshtyansky et al. (US 6,456,426 published Sept. 24, 2002).

****The references made herein are done so for the convenience of the applicant.**

The prior art should be considered in its entirety.

With regard to claims 1, 4, and 8, Bolshtyansky discloses a Raman amplification pump module (fig. 3; col. 5, lines 30-40) *for outputting pump light for Raman-amplification of signal light propagating through an optical waveguide path*, said module comprising:

- a light source system (#48) *for emitting light having two or more different output peak wavelengths (λ_1 - λ_4)*;
- and a nonlinear medium (as is disclosed in instant applicant's specification paragraph [0040]; nonlinear medium can be an optical fiber; #52) having an input port (connected to #50) and an output port (other end of fiber #52), said nonlinear medium *affording nonlinear effect (all optical fibers inherently impart non-linear effects) on light emitted from said light source system and input from the input port, and outputting the resultant light as pump light from the output port (fig. 3 is a pump module).*

With regard to claim 10, Bolshtyansky discloses a broadband light source having an input port (connected to #50) and output port (other end of fiber #52) comprising:

- a light source system (#48) and a nonlinear medium (#52), wherein said light source system emits light having two or more different output peak wavelengths (λ_1 - λ_4);
- and said nonlinear medium *affords nonlinear effect on light input into the input port from said light source system* (all optical fibers inherently impart non-linear effects), and *outputs the resultant light as pump light from the output port* (fig. 3 is a pump module).

With regard to claim 11, Bolshtyansky discloses a Raman amplifier for amplifying signal light propagating through an optical fiber, said amplifier comprising:

- an optical fiber for Raman amplification (fig. 2, #16), a multiplexing module (fig. 2, #34), and a Raman amplification pump module (fig. 3), said Raman amplification pump module comprising:
 - o a light source system (#48) *for emitting light having two or more different output peak wavelengths* (λ_1 - λ_4);
 - o and a nonlinear medium (#52) having an input port (connected to #50) and an output port (other end of fiber #52), *said nonlinear medium affording nonlinear effect* (all optical fibers inherently impart non-linear effects) *on light emitted from said light source system and input from the input port, and outputting the resultant light as the pump light from the output port* (fig. 3 is a pump module).

With regard to claim 2, a high output power laser is disclosed (col. 6, lines 60-65) and the multiplexers are fig. 3, #50. Further, the phrase “*capable of causing optical parametric effect*” is a functional limitation. See below.

With regard to claim 3, the lasers do not have temperature-adjusting means.

With regard to claims 6-7, the wavelength spacing is more than 2nm (col. 6, lines 3-40). Further, the Examiner considers the language directed towards the discretionary selection of the output wavelengths to be function language. See below.

The Examiner considers the claim language identified in italics above to be a functional limitation, i.e. intended use. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone. Since the structural limitations have been met by the prior art, the Examiner has reason to believe that the function limitation can be performed by the prior art structure. See MPEP 2114.

Claim Rejections - 35 USC § 103

11. Claims 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bolshtyansky et al. (US 6,456,426 published Sept. 24, 2002) in view of Agrawal (Fiber-Optic Communication Systems; May 28, 2002).

Bolshtyansky does not specifically disclose the claimed equations. However, Agrawal teaches that these equations may be achieved via routine mathematical calculations well known in the art (pgs. 243-246). It would have been obvious to one of ordinary skill (e.g., an optical engineer) in the art at the time the invention was made to

apply the analytic equations of Agrawal to the device of Boltshtyansky for the advantage of minimizing amplifier noise.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deandra M. Hughes whose telephone number is 571-272-6982. The examiner can normally be reached on M-F, 8:30am-5:00pm.

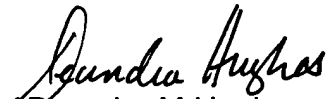
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Art Unit: 3663

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Deandra M Hughes
Primary Examiner
Art Unit 3663